

REMARKS

Claims 1-3, 5, 7, 8, 10-26, and 28-32 are pending in the present application. Claims 4, 6, 9, and 27 are canceled. Claims 1, 2, 7, 8, 13, 14, 16, 18, 19, 21, 23, 29 and 31 are amended. Claim 32 is new. Claims 1, 13 and 21 are independent.

Drawings

In the Office Action, the Examiner objected to the drawings for failing to show the six (6) IGBTs of the rectifier that are co-packaged in an IPM with the switching device. In response, Applicant has filed herewith one (1) sheet of proposed new drawings, which includes Fig. 3A. This figure illustrates six (6) IGBTs Q1-Q6 of a 7-Pack IPM, which are configured as a front-end rectifier. Furthermore, Applicant respectfully submits that the specification has been amended above to accommodate the proposed new Fig. 3.

Applicant respectfully submits that those of ordinary skill in the art will recognize that IGBTs Q1-Q6 in Fig. 3A are arranged according to a well known configuration for implementing a front-end rectifier in an Intelligent Power Module (IPM). Therefore, Applicant respectfully submits that the originally filed specification provides support for these drawing changes in paragraph [0018] of page 6.

Furthermore, Applicant points out that several proposed drawing changes were submitted in the previous Reply (filed September 11, 2003), including proposed corrections to Figures 1 and 3 and a proposed new Figure 2. In the outstanding Office Action, the Examiner has given no indication as to whether these proposed changes have been approved.

However, the Examiner has apparently withdrawn at least some of the drawing objections in the previous Office Action of June 11, 2003, which were addressed by the proposed drawing changes of September 11, 2003. Hence, Applicant presumes that these proposed drawing changes have been approved. However, Applicant respectfully requests the Examiner to expressly indicate whether all previous and current proposed drawing changes have been approved.

Prior Art Rejections

Claims 1-3, 5, 7, 8, 10-26, and 28-31 stand rejected under 35 U.S.C. § 102(b) as being clearly anticipated by U. S. Patent No. 4,573,113 to Bauman (hereinafter "Bauman"). This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

As amended, independent claims 1 and 21 each recites a switching device co-packaged in an Intelligent Power Module (IPM) with a front-end rectifier, such that

the switching device is electrically connected in parallel with a resistor, which is connected in series with a capacitor or capacitor bank.

Applicant respectfully submits that Bauman provides no teaching or suggestion of an IPM integrating a rectifier and a soft-start device, such as the claimed switching device. Instead, Bauman only discloses an uncontrolled rectifier bridge 12 implemented as a distinct circuit component from the silicon controlled rectifier 21 (SCR) and other surge-protection circuitry (elements 22 and 23). Accordingly, Applicant submits that there is no teaching or suggestion of the advantages of integrating the rectifier with soft-start circuitry (e.g., reducing size, complexity, and manufacturing costs of the soft-start system; simplifying thermal management of the switching device, etc.).

Amended independent claim 13 now recites activating a switching device according to hysteresis control to short circuit the resistor and conduct the current flowing through a capacitor while soft-starting an electrical system. Applicant submits that Bauman fails to disclose this feature.

Instead, Bauman's system utilizes a time delay circuit 25 for controlling the SCR 21 to short out resistor 23 after a predetermined time has elapsed (at which the DC link should be fully charged). Thus, while Bauman's system is operable to prevent initial surges during power up, there is no teaching or suggestion in Bauman of a control scheme (e.g., hysteresis control) that protects against in-rush currents

and voltage transients under abnormal conditions, such as power interruptions or “voltage sag.”

Thus, Bauman fails to disclose hysteresis control, or any other type of control scheme that does not rely on a pre-determined time delay to short out the soft-start resistor. Bauman, therefore, fails to anticipate each claimed element in claim 13.

Accordingly, Applicant respectfully submits that independent claims 1, 13 and 21 are allowable over Bauman, at least for the reasons set forth above. Accordingly, Applicant submits that claims 2, 3, 5, 7, 8, 10-12, 14-20, 22-26 and 28-31 are allowable, at least by virtue of their dependency on claims 1, 13 and 21.

Request for Entry and Consideration of Amendments

Entry of the above claim amendments is respectfully requested in that the above amendments do not raise any new issues requiring further search and/or consideration. Particularly, the above claim amendments merely incorporate subject matter into the independent claims that were previously recited in dependent claims and, therefore, have already been considered by the Examiner.

Furthermore, Applicant wishes to point out that “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. V. Union Oil Co. Of California*, 814 F2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Although

the Examiner has rejected all pending claims as being clearly anticipated under § 102(b), the Examiner has only referred to the elements recited in claims 1 and 2. The Examiner has provided no showing where Bauman expressly or inherently discloses the other elements in the other pending claims. For example, the Examiner does not identify any teaching Bauman that discloses a switching device in an IPM, even though this feature was recited in dependent claims 9, 19 and 29 (as they were pending before the above claim amendments).

Accordingly, should the Examiner maintain the position that the claims are not allowable in view of prior art, Applicant respectfully submits that the Examiner must withdraw the finality of this Office Action and particularly point out the portions of the cited prior art that either teach or suggest each recited feature.

Conclusion

The Examiner is respectfully requested to enter the above claim amendments and remarks. In view of these amendments and remarks, Applicant respectfully submits that the various grounds of rejection have been addressed and that the claims are now in condition for allowance.

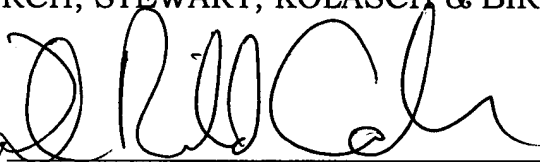
Should the Examiner believe that any outstanding matters remain in the present application, the Examiner is requested to contact Jason Rhodes (Reg. No.

47,305) at the telephone number of the undersigned in order to conduct an interview regarding this application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachments: Proposed Drawing Corrections